Remarks

Claims 1-23 are pending in the application. Claims 1-23 are rejected. Claims 1, 11, 13, 15 and 23 are amended. Claims 3-8, 14, 16-20 and 22 are canceled. All rejections are respectfully traversed.

Claims 22 and 23 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1 and 14 of copending U.S. Patent Application No. 10/802,468.

A letter requesting Express Abandonment of U.S. Patent Application No. 10/802,468 is included with this Amendment to overcome the provisional rejections.

Claims 1-3, 12, 14, 15 and 21-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Gaudette et al., U.S. Patent No. 6,867,782 (Gaudette).

Claim 1 is amended to incorporate the limitations of claims 3-8, 14 and 16-20. Claim 23 is amended to incorporate the limitations of claims 3-8, 14, 16-20 and 22. Claims 3-8, 14, 16-20 and 22 are canceled.

Regarding claim 1 as amended, which incorporates the limitations of claims 3 and 14, claimed is defining a rendering request, the rendering request describing an object to be rendered in a single rendering pipeline including a set of stages connected serially to each other as a sequence of stages so that output of a previous stage provides input to a next stage, the set of stages

7

including, in order, a preprocessed shape descriptor determination stage, a distance field determination stage, a distance values determination stage, an antialiased intensities determination stage, and a colorized image determination stage.

Gaudette describes a method for image processing that stores image data at intermediate nodes in a process tree. Gaudette does not describe a preprocessed shape descriptor determination stage, a distance field determination stage, a distance values determination stage, an antialiased intensities determination stage, and a colorized image determination stage. Gaudette cannot anticipate the claimed invention.

In addition, claimed is querying a progressive cache to determine a most finished cached element representing a display image satisfying the rendering request. The progressive cache includes a set of caches. The set of caches includes a preprocessed shape descriptor cache, a distance field cache, a distance values cache, an antialiased intensities cache, and a colorized image cache. Each cache in the set of caches is arranged to store cached elements in a least finished to a most finished order and there is one cache associated with each stage.

Gaudette describes caching image data from intermediate nodes in a single data cache, see column 3, lines 46-56. Gaudette does not describe a preprocessed shape descriptor cache, a distance field cache, a distance values cache, an antialiased intensities cache, and a colorized image cache. Gaudette cannot anticipate the claimed invention.

8

Also claimed is determining, in a distance field determination stage, a distance from a point in a co-planar field to an edge of the object, where the sign of the distance is negative if the point is outside the object, positive if the point is inside the object, and points on the edge having a zero distance. Nowhere in Gaudette are distances from a point in a co-planar field to an edge of the object, where the sign of the distance is negative if the point is outside the object, positive if the point is inside the object, and points on the edge having a zero distance described. Gaudette cannot anticipate the claimed invention.

Regarding claim 2, claimed is a method for rendering in a single rendering pipeline wherein an output of a stage of the rendering pipeline is sent to a progressive cache, the progressive cache including a preprocessed shape descriptor cache, a distance field cache, a distance values cache, an antialiased intensities cache, and a colorized image cache.

Gaudette describes caching the image data produced at intermediate nodes in a process tree. Gaudette does not describe a rendering pipeline including a preprocessed shape descriptor determination stage, a distance field determination stage, a distance values determination stage, an antialiased intensities determination stage, and a colorized image determination stage. In addition, Gaudette does not describe a progressive cache, the progressive cache including a preprocessed shape descriptor cache, a distance field cache, a distance values cache, an antialiased intensities cache, and a colorized image cache. Gaudette does not anticipate the claimed invention.

9

Regarding claim 12, claimed is a method for rendering wherein the progressive cache finds a cache element using hashing. As above, Gaudette does not describe a progressive cache, the progressive cache including a preprocessed shape descriptor cache, a distance field cache, a distance values cache, an antialiased intensities cache, and a colorized image cache. Gaudette does not anticipate the claimed invention.

Regarding claim 15 as amended, claimed is a method for rendering in a single rendering pipeline including a sequence of stages connected serially to each other as a sequence of stages wherein a particular stage in the sequence of stages processes the rendering request. As above, the rendering pipeline as claimed includes a preprocessed shape descriptor determination stage, a distance field determination stage, a distance values determination stage, an antialiased intensities determination stage, and a colorized image determination stage. Gaudette does not describe these stages. Gaudette does not anticipate the claimed invention.

Regarding claim 21, claimed is a method for rendering wherein the starting stage of a single rendering pipeline associated with the cached element is a next stage of a corresponding stage of a cache of the progressive cache containing the cached element. Gaudette does not describe a single rendering pipeline including a preprocessed shape descriptor determination stage, a distance field determination stage, a distance values determination stage, an antialiased intensities determination stage, and a colorized image determination stage. Gaudette does not describe a progressive cache

10

including a preprocessed shape descriptor cache, a distance field cache, a distance values cache, an antialiased intensities cache, and a colorized image cache. Gaudette does not anticipate the claimed invention.

Regarding claim 23, which incorporates the limitations of claim 22, claimed is a system for rendering including a rendering pipeline including a preprocessed shape descriptor determination stage, a distance field determination stage, a distance values determination stage, an antialiased intensities determination stage, and a colorized image determination stage with associated caches in the progressive cache. Gaudette does not describe a rendering pipeline and progressive cache as claimed. Gaudette does not anticipate the claimed invention.

Claims 4-10 and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gaudette in view of Dawson, U.S. Patent No. 6,561,099 (Dawson).

Regarding claim 1 as amended, which incorporates the limitations of claims 4-8 and 16-20, claimed is a method for rendering wherein a particular stage in the sequences of stages determines distance values, the distance values being a minimum distance from a pixel in the display image to an edge of an object to be rendered in the display image. A display image is two-dimensional. The distance values as claimed are determined in the display image plane. They do not have a depth component.

The combination of Gaudette and Dawson teaches a method for image

processing wherein pixels in a display image are determined to be

foreground, background, or edge pixels. Any process that determines

whether a pixel is a foreground or background pixel, such as the process

described in Dawson, *must* consider depth. Dawson specifically states, at

column 6, lines 40-42,

> The Z-distance value specifies the distance of the
> polygon fragment(s) associated with that pixel from the
> view plane.

Pictorially,
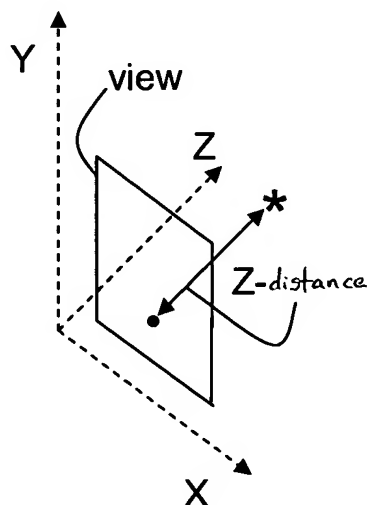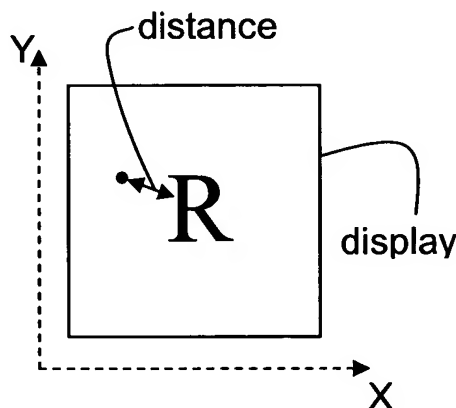
Dawson   Invention

Clearly, the method of Dawson does not determine a minimum distance

from a pixel in the display image to an edge of an object to be rendered in

the display image. No distance values as claimed are determined in Dawson

or Gaudette. The combination of Gaudette and Dawson cannot render the

invention obvious.

12

Regarding claims 9 and 10, claimed is a method for rendering in which distance values for a component of a pixel of the display image are stored in the distance values cache and in which the distance values for the component of a pixel are combined prior to determining an antialiased intensity for the component of the pixel. Again, the claimed distance values are the minimum distance from the component of a pixel in the display image to an edge of the object to be rendered in the display image. No distance values as claimed are determined in Dawson or Gaudette. The combination of Gaudette and Dawson cannot render the invention obvious.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gaudette in view of Naffziger et al., U.S. Patent No. 6,640,283 (Naffziger).
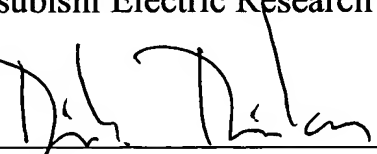
Regarding claim 11, claimed is a method for rendering wherein the data stored in a particular cache in the set of caches of the progressive cache is compressed. Naffziger describes compressing data in a cache. Neither Gaudette nor Naffziger describe a progressive cache including a preprocessed shape descriptor cache, a distance field cache, a distance values cache, an antialiased intensities cache, and a colorized image cache. The combination of Gaudette and Naffziger cannot render the claimed invention obvious.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gaudette in view of Robertson et al., U.S. Patent No. 5,956,744 (Robertson).

13

Regarding claim 13, claimed is a method for rendering wherein the progressive cache eliminates least recently used cache elements from a particular cache in the set of caches when the particular cache is full. Robertson describes a hierarchical cache element replacement priority for replacing least recently used cache elements. Neither Gaudette nor Robertson describe a progressive cache including a preprocessed shape descriptor cache, a distance field cache, a distance values cache, an antialiased intensities cache, and a colorized image cache. The combination of Gaudette and Robertson cannot render the claimed invention obvious.

It is believed that this application is now in condition for allowance. A notice to this effect is respectfully requested. Should further questions arise concerning this application, the Examiner is invited to call Applicants' agent at the number listed below. Please charge any shortage in fees due in connection with the filing of this paper to Deposit Account 50-0749.

Respectfully submitted,
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